APPENDIX B

FORMULAS USED IN THIS REPORT

Accident Rate

The accident rate for a given roadway during a one-year time period is calculated using the following formula:

$R = (Acc * 10^6)/(ADT*365*L)$, where

R = accident rate in accidents per million vehicle mile (acc/mvm),
Acc = number of accidents in one year period,
ADT=average daily traffic volume, and
L=length of study section, in miles.

The accident rate for a street network during a one-year time period can be calculated using the following formula:

$R = Acc/AMD$, where AMD = annual miles driven in million vehicle miles.

AMD is calculated using:

$AMD = WADT*365*RM$, where

$WADT$ = weighted average daily traffic for the street network, calculated by $WADT = (\Sigma ADT*L)/ \Sigma L$, and
RM = road miles for the street network (in million miles).

Traffic volumes for the local streets are not available. Therefore it is necessary to estimate the AMD using arterial volumes. To compensate for the lower volumes on local streets, the result was divided by two. This results in the following formula:

$AMD(estimated) = WADT*365*RM/2$.

Since the AMD is estimated, the accident rate for King County roadways is also an estimate. This estimate is useful in comparing historic rates on county roadways, but would be not be appropriate to compare with accident rates for other jurisdictions.

Societal Costs of Collisions

The cost of collisions were calculated using the following formula:

$Cost = \$6,000*PDO + \$65,000*I + \$1,000,000*F$, where

PDO = Property Damage Only collisions
I = collisions with one or more injuries, and
F = collisions with one or more fatalities.

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Percentage Increase/Decrease

The percentage increase between two measurements made at different times is calculated using the following equation:

Increase (%) = (y-x)/100x, where x = the earlier value and y = the later value

The percentage decrease between two measurements made at different times is calculated using the following equation:

Decrease (%) = (x-y)/100x, where x = the earlier value and y = the later value

Note that result of subtracting the two values is divided by the earlier value for both increases and decreases. These results are not interchangeable: an increase from 50 to 100 is a 100% increase, while a decrease from 100 to 50 is a 50% decrease.